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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,484	12/08/2003	Sadeg M. Faris		2558

26665 7590 09/28/2005

REVEO, INC.  
3 WESTCHESTER PLAZA  
ELMSFORD, NY 10523

EXAMINER
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PETKOVSEK, DANIEL J

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/730,484

Applicant(s)

FARIS, SADEG M.

Examiner

Daniel J. Petkovsek

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on preliminary amendment filed May 17, 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9 and 12 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 10 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/8/03; 5/17/04 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This office action is in response to the pre-amendment filed May 17, 2004. Claims 1-12 are pending.

#### ***Drawings***

1. New corrected drawings (in particular Figures 3, 4A, and 4B) in compliance with 37 CFR 1.121(d) are required in this application because the drawings are informal and hand-drawn. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

#### ***Specification***

2. The disclosure is objected to because of the following informalities: on page 6, line 15, the sentence cuts off without conclusion or a period. Appropriate correction is required. Correction is also required for any other minor informalities which come to the attention of Applicant.

#### ***Claim Objections***

3. Claims 1 and 9-12 are objected to because of the following informalities: please replace "LMLC" with the actual text of "light (or laser) movable liquid crystal". This can be done in claim 1, with "LMLC" following the terminology in parenthesis. In this case, claims 9-12 can include "LMLC" without objection. Appropriate correction is required.

***Double Patenting***

4. Claims 1, 7, and 8 and 12 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 14 of copending Application No. 10/941,294. Although the conflicting claims are not exactly identical, they are not patentably distinct from each other because the claim scope of the conflicting claims encompasses the same overlapping limitations.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-3, 6, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Amstutz et al. U.S.P. No. 4,626,073.

Amstutz et al. U.S.P. No. 4,626,073 teaches (Fig. 3, column 3, line 10 through column 4, line 39) an element for transmitting an optical beam comprising: a substrate (1, 2); a signal source (electric contacts) *capable of* transmitting a radiation signal; and a light movable liquid crystal (w/ elastomer) on the substrate positionable between a first and second position based on the signal, which clearly, fully meets Applicant's *claimed* limitations.

It is noted that the unique behaviors that Applicant speaks of (see specification, page 1, line 10) of liquid crystal elastomers had not been examined at the time of the Amstutz et al. '073 patent.

It has been held that the recitation that an element is “capable of” performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138. Electrodes are “capable of” transmitting electro-magnetic *radiation* signals.

It is noted that no patentable weight has been given to the preamble, because the body of the claim does not include any structure that would give “optomechanical” any further strict definitions.

Regarding claims 2 and 3, the positions create two optically distinguishable states (partially transmissive and/or reflective).

Regarding claim 6, the substrate has a plurality of layers.

Regarding claim 12, the elastomers are disposed with respect to the substrate, and the inherent properties would allow it to be “rotatable”.

7. Claims 1-4, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Sugimoto et al. US 2003/0098945 A1.

Sugimoto et al. US 2003/0098945 A1 teaches (Figs. 12A, 13, [0167]-[0175]) an element for transmitting an optical beam comprising: a substrate (2, 3); a signal source (electrodes 34a, 34b) *capable of* transmitting a radiation signal; and a “light movable” liquid crystal 8 on the

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substrate positionable between a first and second position based on the signal, which clearly, fully meets Applicant's *claimed* limitations.

It is noted that the term "light movable liquid crystal" has been interpreted that the liquid crystal can move light (in one of two states).

It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138. Electrodes are "capable of" transmitting electro-magnetic *radiation* signals.

It is noted that no patentable weight has been given to the preamble, because the body of the claim does not include any structure that would give "optomechanical" any further meaning.

Regarding claims 2 and 3, the positions create reflective and transmissive states.

Regarding claim 4, the substrate is silicon ([0186]).

Regarding claim 6, the substrate has a plurality of layers.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 5, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amstutz et al. U.S.P. No. 4,626,073.

Amstutz et al. U.S.P. No. 4,626,073 teaches (Fig. 3, column 3, line 10 through column 4, line 39) an element for transmitting an optical beam comprising: a substrate (1, 2); a signal source (electric contacts) *capable of* transmitting a radiation signal; and a light movable liquid crystal (w/ elastomer) on the substrate positionable between a first and second position based on the signal. Amstutz et al. '073 does not explicitly teach that the substrate is silicon or silicon on insulator (SOI, claims 4 and 5), or that a micromirror is disposed perpendicular to the plane of the LMLC (claim 9).

Regarding claims 4 and 5, a person having ordinary skill in the art at the time the invention was made would have recognized that using a number of substrates, including silicon or silicon on insulator, would have been an obvious modification to the prior art of Amstutz et al. '073. It is noted that Applicant has not noted any criticality of using silicon or SOI, and the use of silicon or SOI for a substrate would improve the insulation means of the optical system, in order to decrease interference based upon signals that are blocked by the insulation and/or semiconductor properties of the SOI.

Regarding claim 9, a person having ordinary skill in the art at the time the invention was made would have recognized disposing a micro-mirror in the optical system of Amstutz et al. '073. There is no claimed criticality of having a micro-mirror in the system, unless it is connected in some way to the LMLC material (see structure of claims 10, 11). It would have been obvious in the art of Amstutz et al. '073 to use a micro mirror for the purpose of reflecting optical signals in a MEMS-type device in order to allow optical switching to be accomplished. The invention of Applicant would not function as a switch without this mirror being attached in some sense to the LMLC.

10. Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugimoto et al. US 2003/0098945 A1.

Sugimoto et al. US 2003/0098945 A1 teaches (Figs. 12A, 13, [0167]-[0175]) an element for transmitting an optical beam comprising: a substrate (2, 3); a signal source (electrodes 34a, 34b) *capable of* transmitting a radiation signal; and a “light movable” liquid crystal 8 on the substrate positionable between a first and second position based on the signal. Sugimoto et al. ‘945 does not explicitly teach that the substrate is silicon on insulator (SOI, claim 5), or that a micromirror is disposed perpendicular to the plane of the LMLC (claim 9).

Regarding claim 5, a person having ordinary skill in the art at the time the invention was made would have recognized that using a number of substrates, including silicon on insulator, would have been an obvious modification to the prior art of Sugimoto et al. ‘945. It is noted that Applicant has not noted any criticality of using SOI, and the use of SOI for a substrate would improve the insulation means of the optical system, in order to decrease interference based upon signals that are blocked by the insulation properties of the SOI.

Regarding claim 9, a person having ordinary skill in the art at the time the invention was made would have recognized disposing a micro-mirror in the optical system of Sugimoto et al. ‘945. There is no claimed criticality of having a micro-mirror in the system, unless it is connected in some way to the LMLC material (see structure of claims 10, 11). It would have been obvious in the art of Amstutz et al. ‘073 to use a micro mirror for the purpose of reflecting optical signals in a MEMS-type device in order to allow optical switching to be accomplished.



The invention of Applicant would not function as a switch without this mirror being attached in some sense to the LMLC.

*Allowable Subject Matter*

11. Claims 7, 8, 10, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding claims 7 and 8, the relevant prior art of record does not teach an optical switch in which a light movable liquid crystal is actually controlled by light to create its switching movements. Regarding claims 10 and 11, the relevant prior art of record does not teach or reasonably suggest a micromirror that is hinged to a LMLC (which creates said switching movements).

*Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, with respect to the state of the art of optical switches using "activated" liquid crystal material: PTO-892 form references C-F.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Petkovsek whose telephone number is (571) 272-2355. The examiner can normally be reached on M-F 8:30-5:00.

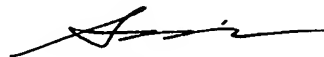
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel Petkovsek  
September 23, 2005



Sung Pak  
Patent Examiner  
AU 2874